

Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (ORIGINAL) A signal production circuit for producing, from digital data, a plurality of kinds of pulse signals which are respectively repetitions of a predetermined sequence of pulses, comprising:

storage means for storing, as the digital data, a single signal of serial data including a time series of data pulses representative of all rise and fall timings of the plurality of kinds of pulse signals and data pulses representative of all time intervals between the rise and fall timings; and

serial-to-parallel converter means for reading the signal of serial data from the storage means and producing, as parallel data, the plurality of kinds of pulse signals from the data representative of all the predetermined rise and fall timings of the plurality of kinds of pulse signals.

2. (ORIGINAL) The signal production circuit as defined in claim 1, wherein

the serial-to-parallel converter means includes a plurality of flip-flops, connected in cascade so that an output signal of one flip-flop is an input signal of a next, which convert data from serial to parallel by sequentially latching input data based on the signal of serial data which serves as a common clock signal to all the flip-flops, and deriving output signals from predetermined ones of the plurality of flip-flops as the parallel data.

3. (ORIGINAL) The signal production circuit as defined in claim 2, further comprising

combining means for producing the plurality of kinds of pulse signals by combining output signals from the predetermined ones of the plurality of flip-flops.

4. (ORIGINAL) The signal production circuit as defined in claim 1, further comprising control switching means for supplying the produced plurality of kinds of pulse signals to a plurality of circuits which operate in respective sequences of a common frame period, by switching from one circuit to another at the common frame period.

5. (ORIGINAL) The signal production circuit as defined in claim 1, wherein the serial-to-parallel converter means performs an AND operation between the signal of serial data and data pulses with a pulse period equal to, or shorter than, a base pulse width of the signal of serial data and with a base pulse width $1/n$ times that of the signal of serial data, where n is an integer, before the conversion to the parallel data is performed.

6. (ORIGINAL) The signal production circuit as defined in claim 1, wherein:
the storage means stores the single signal of serial data into which a plurality of signals of serial data representative of a plurality of sequences are merged; and
the serial-to-parallel converter means decomposes the single signal of serial data into the signals of serial data, each signal representative of one of the plurality of sequences, and produces parallel data representative of the plurality of sequences from the signals of serial data.

7. (ORIGINAL) The signal production circuit as defined in claim 1, wherein:
the plurality of kinds of pulse signals are used to drive matrix-type display elements in a predetermined sequence.

8. (ORIGINAL) The signal production circuit as defined in claim 1, wherein:
the single signal of serial data includes a time series of data pulses each of which rises in synchronism with at least one of rise and fall timings of the plurality of kinds of pulse signals.

9. (ORIGINAL) A display device including a signal production circuit for producing, from digital data, a plurality of kinds of pulse signals which are respectively repetitions of a predetermined sequence of pulses,

the signal production circuit comprising:

storage means for storing, as the digital data, a single signal of serial data including a time series of data pulses representative of all rise and fall timings of the plurality of kinds of pulse signals and data pulses representative of all time intervals between the rise and fall timings; and

serial-to-parallel converter means for reading the signal of serial data from the storage means and producing, as parallel data, the plurality of kinds of pulse signals from the data representative of all the predetermined rise and fall timings of the plurality of kinds of pulse signals.

10. (ORIGINAL) The display device as defined in claim 9, further comprising display pixels which are constituted by electroluminescence elements.

11. (ORIGINAL) The display device as defined in claim 9, further comprising a matrix-type display element, wherein

the signal production circuit produces, as the plurality of kinds of pulse signals, a plurality of control signals to drive the display element in a predetermined sequence.

12. (ORIGINAL) The display device as defined in claim 11, further comprising a write drive circuit for sequentially applying to display pixels write voltage which is necessary for the display pixels to emit light,

wherein the signal production circuit supplies plurality of first timing signals to a write drive circuit as the control signals to control an application timing of the write voltage.

13. (ORIGINAL) The display device as defined in claim 11, further comprising a modulation drive circuit for applying to display pixels modulation voltage which turns on or off the display pixels according to display data,

wherein the signal production circuit supplies to the modulation drive circuit a plurality of second timing signals as control signals to control timings of application of the modulation voltage.

14. (PREVIOUSLY PRESENTED) The signal production circuit of claim 1, wherein one of the plurality of pulse signals produced by the serial-to-parallel converter means is overlapped in time with another of the plurality of pulse signals produced by the serial-to-parallel converter means.

15. (PREVIOUSLY PRESENTED) The signal production circuit of claim 1, wherein the serial-to-parallel converter means is configured so one of the plurality of pulse signals produced by the serial-to-parallel converter means is overlapped in time with another of the plurality of pulse signals produced by the serial-to-parallel converter means.

16. (PREVIOUSLY PRESENTED) The signal production circuit of claim 1, wherein the plurality of pulse signals produced by the serial-to-parallel converter means are a plurality of control signals for controlling the operation of a device embodying the signal production circuit, and

the single signal of serial data includes a time series of data pulses representative of all rises and fall timings of the plurality of control signals and data pulses of all time intervals between such rise and fall timings.

17. (PREVIOUSLY PRESENTED) The signal production circuit of claim 16, wherein the serial-to-parallel converter means is arranged so as to produce the control signals from the reading of the single signal of serial data that includes a time series of data pulses representative of all rises

and fall timings of the plurality of control signals and data pulses of all time intervals between such rise and fall timings.

18. (PREVIOUSLY PRESENTED) The signal production circuit of claim 6, wherein at least one pulse signal produced by the serial-to-parallel converter means for one sequence is overlapped in time with another pulse signal of one of said one sequence or another of the plurality of sequences.

19. (PREVIOUSLY PRESENTED) The display device of claim 9, wherein one of the plurality of pulse signals produced by the serial-to-parallel converter means is overlapped in time with another of the plurality of pulse signals produced by the serial-to-parallel converter means.

20. (PREVIOUSLY PRESENTED) A signal production circuit for producing, from digital data, a plurality of kinds of pulse signals which are respectively repetitions of a predetermined sequence of pulses, comprising:

a memory for storing, as the digital data, a single signal of serial data including a time series of data pulses representative of all rise and fall timings of the plurality of kinds of pulse signals and data pulses representative of all time intervals between the rise and fall timings; and

a serial-to-parallel conversion circuit for reading the signal of serial data from the memory and producing, as parallel data, the plurality of kinds of pulse signals from the data representative of all the predetermined rise and fall timings of the plurality of kinds of pulse signals.

21. (PREVIOUSLY PRESENTED) A display device including a signal production circuit for producing, from digital data, a plurality of kinds of pulse signals which are respectively repetitions of a predetermined sequence of pulses, the signal production circuit comprising:

a memory for storing, as the digital data, a single signal of serial data including a time series of data pulses representative of all rise and fall timings of the plurality of kinds of pulse signals and data pulses representative of all time intervals between the rise and fall timings; and

a serial-to-parallel conversion circuit for reading the signal of serial data from the memory and producing, as parallel data, the plurality of kinds of pulse signals from the data representative of all the predetermined rise and fall timings of the plurality of kinds of pulse signals.

22. (NEW) The signal production circuit of claim 1, wherein the serial-to-parallel converter means comprises circuitry that is configured to read the serial data of the stored single signal and to compose and output therefrom each of the plurality of kinds of pulse signals embodied within the single signal of serial data.

23. (NEW) The display device of claim 9, wherein the serial-to-parallel converter means of the signal production circuit comprises circuitry that is configured to read the serial data of the stored single signal and to compose and output therefrom each of the plurality of kinds of pulse signals embodied within the single signal of serial data.

24. (NEW) The signal production circuit of claim 16, wherein the serial-to-parallel converter means comprises circuitry that is configured to read the serial data of the stored single signal and to compose and output therefrom each of the plurality of control signals embodied within the single signal of serial data.

25. (NEW) The signal production circuit of claim 20, wherein the serial-to-parallel conversion circuit is configured and arranged so as to read the serial data of the stored single signal and to compose and output therefrom each of the plurality of kinds of pulse signals embodied within the single signal of serial data.

26. (NEW) The display device of claim 9, wherein the serial-to-parallel conversion circuit is configured and arranged so as to read the serial data of the stored single signal and to compose and output therefrom each of the plurality of kinds of pulse signals embodied within the single signal of serial data.